

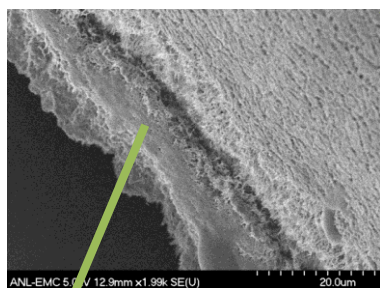
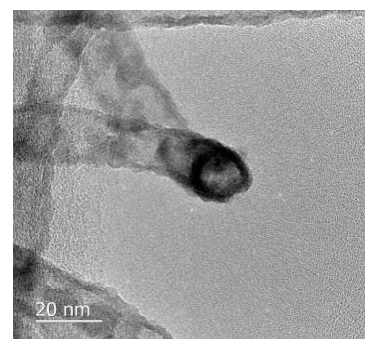
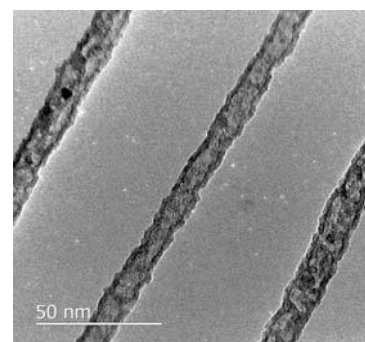
MAGNETIC NANOTUBE COMPOSITE MEMBRANES

Wastewater Treatment and Catalytic Separations

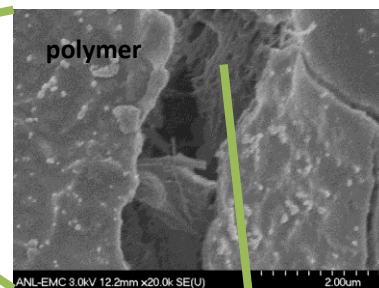
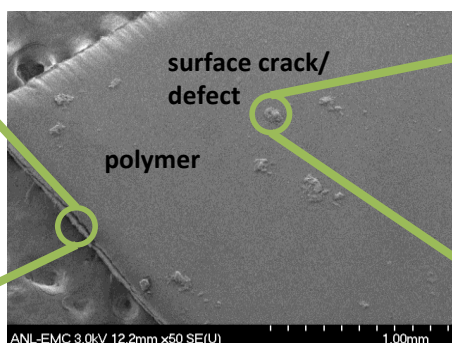
OUR WORK

Argonne has developed a prototype nanocomposite membrane made from magnetic nanotubes embedded onto a microporous support. The perm-selective layer is comprised of high aspect ratio nanotubes that function as pores/nanochannels embedded in a nonporous encapsulating polymer. Our metal/metal oxide nanotubes offer key advantages:

- (1) Hydrophilic surface provides improved antifouling properties, as increased hydrophilicity has been correlated with a decrease in fouling;
- (2) Facile nanotube alignment via a magnetic field, which also allows for close-packing to afford a high density of channels thereby improving permeability;
- (3) Tunability of the nanotube diameters (both inner and outer) for varying applications according to desired retentate in the feed and Metal/metal oxide catalytic activity. We fabricate our membranes using a scalable technology on a wide-web format.



Support



Nanotubes/fibers

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